

### **REMARKS / DISCUSSION OF ISSUES**

The present amendment is submitted in response to the Office Action mailed September 15, 2009. In view of the remarks to follow and amendments above, reconsideration and allowance of this application are respectfully requested.

#### ***Status of Claims***

Claims 1-2 and 4-13 remain in this application. Claims 1, 7, 9, 11, 12, 13 have been amended.

#### ***Claim Rejections under 35 USC 102***

In the Office Action, Claims 1-2, 4-5, and 9-13 stand rejected under 35 U.S.C. §102(b) as being anticipated by WO 02/50790 ("Farrall"). Applicants respectfully traverse the rejections.

#### **Claims 1-2, 4-5 and 9-13 are allowable**

Independent Claim 1 has been amended herein to better define Applicant's invention over Farrall. It is respectfully submitted that independent Claim 1, as herewith amended, now recites limitations and/or features which are not disclosed by Farrall. Therefore, the cited portions of Farrall do not anticipate claim 1, because the cited portions of Farrall do not teach every element of claim 1. For example, the cited portions of Farrall do not disclose or suggest, *"a light source for providing a set of challenges to the optical identifier in a single authentication phase giving rise to a corresponding set of responses, when the information carrier is present in the apparatus, the set of challenges being generated by a light beam incident on the optical identifier giving rise to the set of response"*, as recited in claim 1 (Emphasis Added). In contrast to claim 1, the cited portions of Farrall merely discloses that an Optics system of the reader includes, *inter alia*, a method of introducing the card, etc., reproducibly. See Farrall, page 18, bullet 7. Applicants respectfully submit this does not teach or suggest providing a set of challenges in a single authentication stage giving rise to a corresponding set or responses. Rather, a reasonable interpretation suggests that Farrall is disclosing nothing more than a general requirement of the optics system of the reader to be

able to accept cards into the system, reliably and repeatedly. Applicants submit that such an interpretation does not teach or suggest providing challenges and receiving a set of corresponding responses. Claim 1 has been amended to more particularly and precisely recite that the set of challenges is provided to the optical identifier **in a single authentication phase** to produce the corresponding set of responses. In other words, in a single authentication session, the information carrier in the apparatus is repeatedly challenged giving rise to a corresponding set of responses. Applicants submit this is different from repeatedly and reliably introducing a card into an optical system reader.

In the Response to Arguments, at page 12 of the instant Office Action, the Examiner asserts that Farrall does teach a set of challenges, for example, on page 45, item z, Farrall discloses, “These [sources] could be “fired off” simultaneously.... So that more than one image is recorded.” The Examiner asserts that this provides a set of challenges to the tag and particles. Applicants respectfully disagree. While Farrall may describe the use of multiple images, it should be understood that the multiple images are used, the multiple images not used as separate challenges, as suggested by the Examiner. Rather, the multiple images merely provide a convenient way of obtaining more precise and detailed information of the tag at a plurality of angles for recording a tag image. For example, Farrall describes at page 47, a manufacturing sequence for the tag including the step of: activating the system by presenting the tag area to the reader by the tag supplier. The tag area is illuminated and **an image is recorded**. In other words, despite any complexity used in deriving the image, e.g., firing off many sources simultaneously, the outcome of the activation step is a single image whose complexity is determined by the manufacturer of the tag.

Further, Applicants submit that the claim 1 recitation, “...*giving rise to a corresponding set of responses*....”, has to the best of the Applicant’s knowledge not been explicitly addressed in the Office Action. The only indirect reference in the Office Action to a set of responses is the reference made to a **detector for detecting a corresponding set of responses to the set of challenges** as different speckle patterns, which is claimed to be taught in Farrall at pg. 44-45, item w. Applicants submit that the item w reference was taken out of context by the Examiner. Specifically, Farrall teaches at pg. 44-45 that the different particle

arrangements, sizes, shapes, mixtures of colors lead to different speckle patterns. The different arrangements of particles, sizes and shapes only support the feature that a unique optical signature may be obtained for the different oriented crystals. However, what is not supported at pg. 33-45 is the Examiner's assertion that Farrall teaches a set of challenges producing a corresponding set of responses. Analyzing the disclosure of Farrall in its entirety, it is obvious that Farrall does not teach or suggest an authentication method that includes applying a set of challenges to produce a corresponding set of responses. Instead, Farrall merely discloses the creation of **a single digitized baseline image for comparison with a single field image**. Specifically, Farrall discloses a reader, including one or more light sources, that is able to digitize the 'signature' of, say, a credit card and place this in some form against a reference image. A **single digitized signature of a credit card** is thus created during an 'activation' stage where the tag area is presented to the reader and illuminated by one or more light sources and a pixel by pixel image of the illuminated particles is recorded in the reader and the encrypted coordinates of the original (genuine) image decrypted. The PC or software then searches for illuminated pixels in the positions where they should be. The degree of matching between the encrypted coordinates and the ones that agree in the image recorded at the point of user verification decides on pass/fail.

Farrall describes a process sequence for the application of a tag to a credit card, with respect to Fig. 19. *See* Farrall, page 31. The process flow includes: an initiation stage that includes placing the tagged card in the reader, **whereupon the image is recorded and digitized**, encrypted and stored in the memory on the object itself and/or transmitted to a remote PC. When the card is read at a subsequent time, such as when authentication is required, for example, when using it in an ATM or sports venue turnstile, **the image is again recorded and digitized**, The encrypted image information is recalled and decrypted, and The two images compared and correlated. Depending on the application and degree of security required and consequences of false rejection, the degree of match determines a go/no-go decision. Applicants submit that the process flow clearly indicates that Farrall does not teach the use of a set of challenges to produce a corresponding set of responses. Instead, the process flow clearly indicates the use of single baseline image to be compared against a single subsequent image when authentication is required. Thus, it is shown that the process of

Farrall does not teach at least the claim 1 recitation, “....*giving rise to a corresponding set of responses....*”.

Claim 1, has been further amended and now recites additional limitations and/or features which are not disclosed by Farrall. Therefore, the cited portions of Farrall do not anticipate claim 1, because the cited portions of Farrall do not teach every element of claim 1. For example, the cited portions of Farrall do not disclose or suggest, “*a computational unit for applying a mathematical function to the corresponding set of responses*”, as recited in claim 1. Applicant’s specification at page 7, lines 11-17 recites in relevant part that the computational unit applies a mathematical function, which could be a one-way function, to the set of responses obtained from the set of challenges:

The authentication information 17 present in the information carrier 11 does not need to comprise an exact copy of the response, but rather the result of a mathematical function applied to the challenge, the mathematical function being preferably a secret shared between the apparatus 10 and the producer of the information carrier 11. In this case the verification unit 19 operates the comparison after a computational unit has applied the mathematical function to the response obtained. Preferably, in order to further strengthen the security of a such system, the mathematical function is a one-way function. [Emphasis Added]

Farrall discusses **mathematical functions only** in the context of unlocking an encrypted signature, wherein the encrypted signature function is related to the ID assigned by the manufacturer of the tag by **some mathematical function**. See Farrall, pages 10 and 49. Farrall describes the use of encryption as an additional safeguard which may be incorporated into the system. Farrall teaches that by using dual key encryption, it is impossible for the forger to make a fake tag which matches a genuine encrypted number. The encryption process of Farrall used to generate a serial number for a tag uses a private key known only to the manufacturer. As explained in Farrall, the encryption is used as an **additional safeguard** different from utilizing optical signatures by the reflection and/or refraction of light off randomly positioned and oriented crystals. Specifically, Farrall does not teach or suggest applying a

mathematical function to a set of responses obtained from a set of challenges applied to the information carrier.

Therefore, the cited portions of the above reference fail to disclose or suggest at least one element of claim 1. Hence, claim 1 is allowable.

Claims 2 and 4-5 depend from claim 1, and are therefore allowable at least by virtue of their dependence from allowable claim 1.

Independent Claims 9, 11, 12 and 13 recite similar subject matter as Independent Claim 1 and therefore contains the limitations of Claim 1. Hence, for at least the same reasons given for Claim 1, Claims 9, 11, 12 and 13 are believed to recite statutory subject matter under 35 USC 102(b).

Claim 10 depends from independent Claim 9, which Applicants have shown to be allowable. Accordingly, claim 9 is also allowable, at least by virtue of its respective dependency from claim 10.

**Claims 6-7 are allowable**

In the Office Action, Claims 6-7 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Farrall in view of U.S. Patent No. 7,121,465 ("Rignell"). Applicants respectfully traverse the rejections.

As explained above, the cited portions of Farrall do not disclose or suggest each and every element of claim 1 from which claims 6-7 depend. Rignell does not disclose each of the elements of claim 1 that are not disclosed by Farrall.

Thus, the cited portions of Farrall and Rignell, individually or in combination, do not disclose or suggest each and every element of claim 1. Hence claim 1 is allowable and claims 6-7 are allowable, at least by virtue of their respective dependence from claim 1.

**Claim 8 is allowable**

In the Office Action, Claim 8 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Farrall in view of U.S. Patent No. 6,910,629 ("Nishigata"). Applicant respectfully traverses the rejection.

As explained above, the cited portions of Farrall do not disclose or suggest each and every element of claim 1 from which claim 8 depends. Nishigata does not disclose each of the elements of claim 1 that are not disclosed by Farrall. Nishigata is merely cited by the Office for disclosing a measuring time elapsing between challenging the optical identifier and detecting the speckle pattern.


Thus, the cited portions of Farrall and Nishigata, individually or in combination, do not disclose or suggest each and every element of claim 1. Hence claim 1 is allowable and claim 8 is allowable, at least by virtue of its respective dependence from claim 1.

**Conclusion**

In view of the foregoing amendments and remarks, it is respectfully submitted that all claims presently pending in the application, namely, Claims 1-2 and 4-13 are believed to be in condition for allowance and patentably distinguishable over the art of record.

If the Examiner should have any questions concerning this communication or feels that an interview would be helpful, the Examiner is requested to call Mike Belk, Esq., Intellectual Property Counsel, Philips Electronics North America, at 914-945-6000.

Respectfully submitted,



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**Expedited Procedure**

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